probable that the petioles of even the tree ferns could have furnished such large flattened plates of scalariform ducts unmixed with other tissues as are found in the coal, and which *very rarely* have any traces of fronds of ferns preserved in the same mass.

4. It is possible that the ducts in question may really have belonged to the *Stigmaria* itself. Lindley and Hutton, from the examination of a magnified section of a silicified *Stigmaria*, pronounce it to be a plant whose woody portions were entirely composed of *spiral vessels*; but their figure of these vessels, however interesting, leaves some room to suppose that *spirally dotted ducts* partly obscured by petrifaction might have been mistaken for true spiral vessels. [See Fossil Flora of Great Britain, vol. iii. pl. 166.] This view is confirmed by Unger, who attributes dotted ducts alike to the *Stigmariæ* and the woody layers of *Lepidodendreæ* and *Sigillariæ* (Endl. Gen. Plant. sup. 2. pp. 5, 6).

5. Vascular bundles must certainly have extended from the scars found on the *Stigmaria* and *Sigillaria* to the deciduous appendages (see Foss. Flora, vol. i. plates 31, 32 and 33), whether these latter were leaves or radical fibres, and the partial decay of masses composed of numerous layers of such appendages would account for most of the appearances observed in the coal.

6. The proofs afforded by these examinations, that the coal is composed of layers, of great tenuity, of vegetable matters scattered in a confused manner, and that no trunks of trees or any considerable portion of their branches had anything to do with its formation, are in exact accordance with the inferences drawn by Prof. H. D. Rogers from an examination of the mechanical structure of unburned coal*.

7. As anthracite is only bituminous coal which has lost its volatile matter, the results obtained from it apply to all varieties of the true coal of the carboniferous epoch. The presence of bitumen, however, and the consequent swelling and partial fusion of the ordinary coal, render it difficult to obtain from it the tissues in the perfection in which they may be found in anthracite.

Physiological Remarks on the Statics of Fishes. By Joh. Müller.

Like all animals, fishes have a very delicate sense of the equilibrium of their body; they counteract any change in this position by means of movements, partly voluntary, partly instinctive. These last are seen in a very remarkable manner in the eyes, and they are so constant, so evident in the fish as long as it lives, that their absence suffices to characterize the death of the animal.

The equilibrium of the body of a fish in the water is independent of the natatory bladder; this organ may even interfere with it. The equilibrium of the fish, its horizontal position with the back upwards, depends solely on the action of the fins, and principally on the vertical fins.

The natatory bladder may assist the fish to increase or to diminish its specific gravity. By compressing the air which is contained in

* See Transactions of the Association of American Geologists, p. 448.

it, the fish descends in the water; it rises again by relaxing the muscles which had served to compress the bladder. Moreover, the fish may remain at the bottom of the water, by the very fact of the pressure of the column of water on the air contained in the bladder.

By compressing more or less the posterior portion or the anterior portion of the bladder, the animal is able to render the anterior half or the posterior half of its body lighter at will; it can also take an oblique position, which allows a movement of rising or of descending in the water. The arrangement of the natatory bladder in some fishes might favour this action. The Cyprinoids and the Characi have two bladders, one before the other, and communicating together by a narrow tube. The anterior bladder is very elastic, whereas the posterior one is very slightly so; and in proportion as the fish rises in the water, the anterior bladder, which is the most elastic, must considerably increase in volume, and thus keep the head of the animal up, whilst the contrary must be the case when the fish descends.—*Müller's Archiv*, 1845, p. 456.

CICONIA ALBA.

A fine specimen of the Stork (*Ciconia alba*, Ray) was shot a few weeks since near Fermoy in the county of Cork. It appears that three individuals were seen, but this only was procured. It is now in the possession of the Rev. Mr. Bradshaw of this city. I am not aware of any authentic record of the species having been met with in Ireland before.

J. R. Harvey, M.D.

Cork, June 17, 1846.

Embryogeny of the Ornithomyiæ. By M. Blanchard.

The *Ornithomyiæ*, or *Pupipares* of Latreille, are parasitic on mammiferæ and birds. They have for a long time attracted the attention of entomologists, by an exceptional mode of reproduction which distinguishes them from all other insects. They do not deposit eggs, nor even larvæ, like some other Diptera, but nymphs, the external envelope of which hardens in contact with the air, and from which issues a few days afterwards the perfect insect.

Anatomists are not agreed as to whether the embryos pass, in the maternal ovary, through the ordinary phases of the metamorphoses of insects. Latreille supposed that the nymphs are at first under the form of eggs, and pass their life as larvæ within the body of the mother. Leon Dufour, from examinations of the *Hippoboscus* of the horse, and the *Melophagus* of sheep, thinks, on the contrary, that the embryos of the *Ornithomyiæ* are never comparable to eggs or to larvæ.

M. Blanchard has examined the *Leptotena* of the stag, and he has found, in the ovary of the females, embryos which completely resemble the larvæ of the Diptera, by their soft teguments, their corneous head, their two long tracheæ, and their nervous system collected in the anterior part of the body. The only important difference